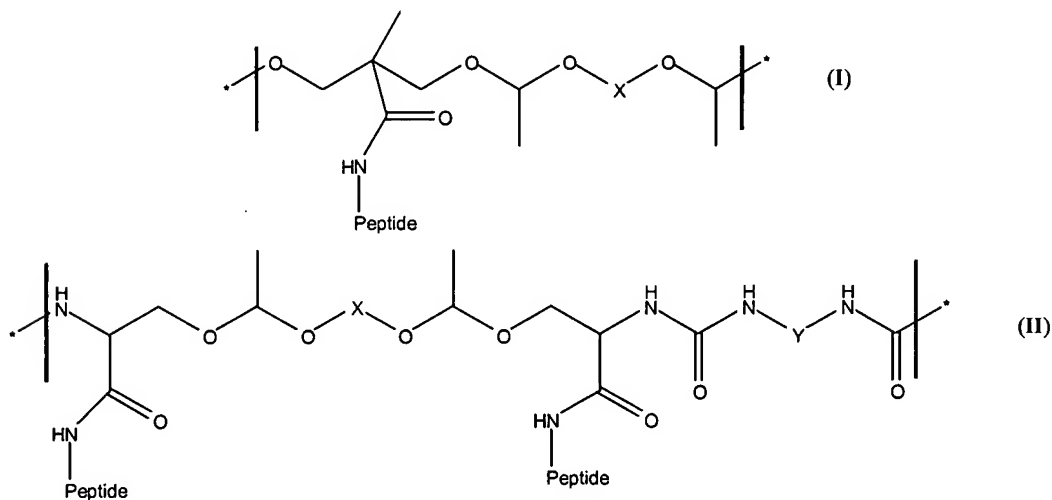


AMENDMENTS TO THE CLAIMS

1. (Original) A complex for delivering a polynucleotide to a cell, comprising: (a) a polynucleotide and (b) a biodegradable polyacetal-peptide.
2. (Original) The complex of Claim 1 in which the polynucleotide is selected from the group of consisting of DNA and RNA.
3. (Original) The complex of Claim 1 in which the polynucleotide is selected from the group consisting of plasmid DNA, antisense, DNA oligomers, siRNA, ribozyme, and aptamer.
4. (Original) The complex of Claim 1 in which the peptide comprises 2 to 45 amino acids with at least one or more arginine or lysine amino acids from 20 biological amino acids.
5. (Original) The complex of Claim 1 in which the biodegradable polyacetal-peptide comprises at least one recurring unit represented by a formula selected from the group consisting of (I) and (II):



wherein the peptide is selected from any continuous combination of 2 to 45 amino acids with at least one or more arginine or lysine amino acids from 20 biological amino acids;

wherein X is selected from the group consisting of CH_2CH_2 , $\text{CH}_2\text{CH}_2\text{CH}_2\text{CH}_2$, $\text{CH}_2\text{CH}_2\text{OCH}_2\text{CH}_2$, and $\text{CH}_2\text{CH}_2\text{OCH}_2\text{CH}_2\text{OCH}_2\text{CH}_2$; and

wherein Y is selected from the group consisting of linear or branched C_4H_8 , C_5H_{10} , C_6H_{12} , C_7H_{14} , C_8H_{16} , $\text{C}_{10}\text{H}_{20}$, and $\text{C}_{12}\text{H}_{24}$.

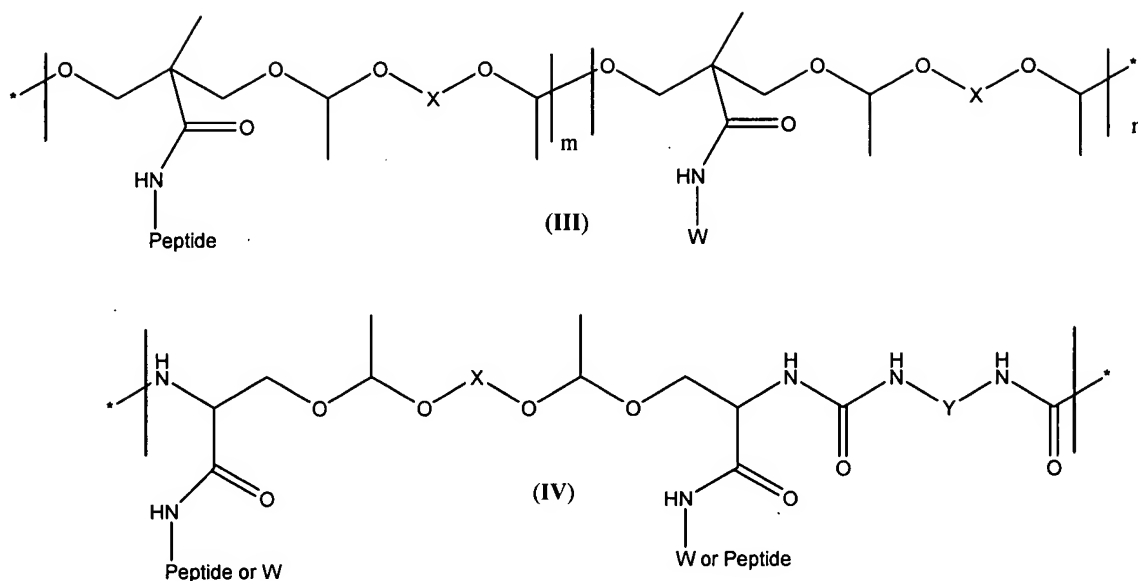
6. (Currently amended) The complex of Claim 5 in which the peptide is selected from the group consisting of

NH₂-GIGAVLKVLTTGLPALISWIKRKRQQ-COOH, (SEQ ID NO: 1)
NH₂-CIGAVLKVLTTGLPALISWIKRKRQQ-COOH, (SEQ ID NO: 2)
NH₂-GIGAVLKVLTTGLPALISWIRRRRRRRRQQ-COOH, (SEQ ID NO: 3)
NH₂-CIGAVLKVLTTGLPALISWIRRRRRRRRQQ-COOH, (SEQ ID NO: 4)
NH₂-KRKRQQ-COOH (SEQ ID NO: 5),
NH₂-CKRKRQQ-COOH (SEQ ID NO: 6), NH₂-CKRKR-COOH (SEQ ID NO: 7), NH₂-HLVKGRG-COOH (SEQ ID NO: 8),
NH₂-CDCRGDCFC-COOH (SEQ ID NO: 9), NH₂-RRRR-COOH (SEQ ID NO: 11), or NH₂-RRRRRRR-COOH (SEQ ID NO: 10).

wherein X is selected from the group consisting of CH₂CH₂, CH₂CH₂CH₂CH₂, CH₂CH₂OCH₂CH₂, and CH₂CH₂OCH₂CH₂OCH₂CH₂; and

wherein Y is selected from the group consisting of linear or branched C₄H₈, C₅H₁₀, C₆H₁₂, C₇H₁₄, C₈H₁₆, C₁₀H₂₀, and C₁₂H₂₄.

7. (Original) The complex of Claim 1 in which the biodegradable polyacetal-peptide comprises at least one recurring unit represented by a formula selected from the group consisting of (III) and (IV):



wherein the peptide is selected from any continuous combination of 2 to 45 amino acids with at least one or more arginine or lysine amino acids from 20 biological amino acids;

wherein X is selected from the group consisting of CH_2CH_2 , $\text{CH}_2\text{CH}_2\text{CH}_2\text{CH}_2$, $\text{CH}_2\text{CH}_2\text{OCH}_2\text{CH}_2$, $\text{CH}_2\text{CH}_2\text{OCH}_2\text{CH}_2\text{OCH}_2\text{CH}_2$;

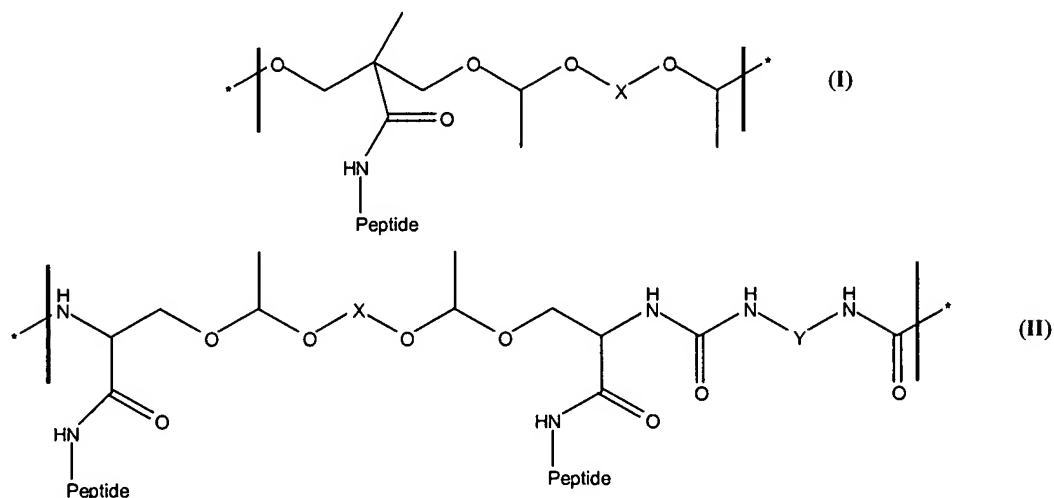
wherein Y is selected from the group consisting of linear or branched C_4H_8 , C_5H_{10} , C_6H_{12} , C_7H_{14} , C_8H_{16} , $\text{C}_{10}\text{H}_{20}$, and $\text{C}_{12}\text{H}_{24}$; and

wherein W is a fatty acid moiety or a targeting ligand selected from the group consisting of galactose, lactose, mannose, transferrin, antibody fragment, and RGD peptide; and

m and n are positive integers.

8. (Original) A method of making the complex of Claim 1, comprising intermixing the polyacetal-peptide and the polynucleotide.
9. (Original) A method of making a complex for delivering a polynucleotide to a cell comprising intermixing a solution comprising the polyacetal-peptide of Claim 5 to a second solution comprising the polynucleotide.
10. (Original) A method for transfecting a cell, comprising contacting the cell with the complex of Claim 9.
11. (Original) A polyacetal-peptide represented by formula (I) or (II).

12. (Original) A method of cell transfection comprising the steps of:
- (a) seeding cells to be transfected onto a solid support;
 - (b) mixing a polynucleotide for transfection with a polyacetal peptide;
 - (c) contacting the polynucleotide-polyacetal-peptide mixture with the seeded cells on the solid support; and
 - (d) incubating the solid support to allow transfection.
13. (Original) The method of claim 12, wherein a weight ratio of the polynucleotide to the polyacetal peptide is between about 1:4 and 1:50.
14. (Original) The method of claim 13, wherein the weight ratio of the polynucleotide to the polyacetal peptide is between about 1:16 and 1:32.
15. (Original) The method of claim 12, wherein the polyacetal peptide comprises at least one recurring unit represented by a formula selected from the group consisting of (I) and (II):

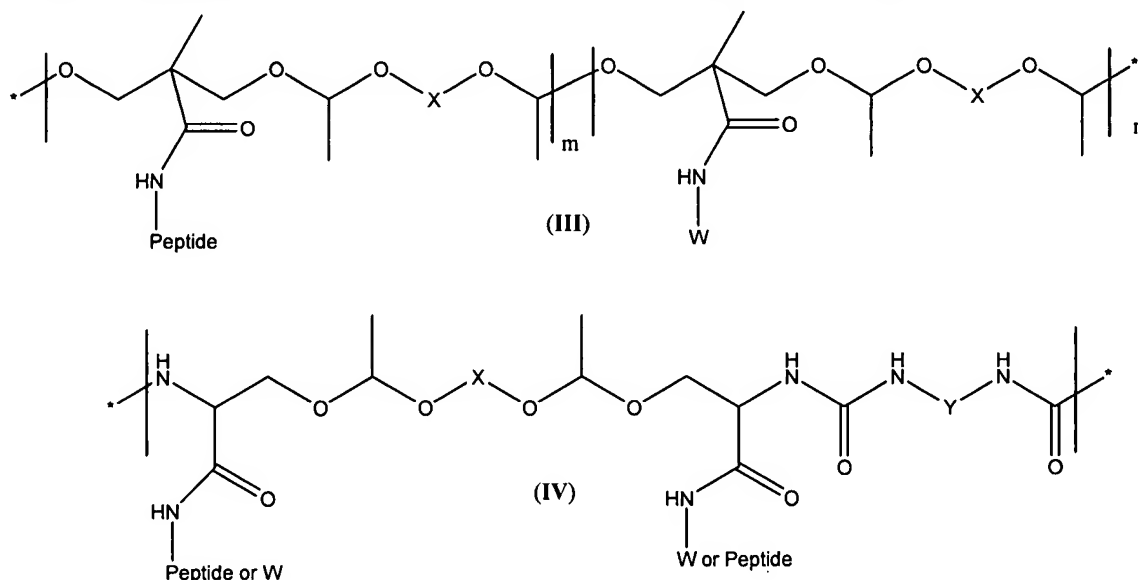


wherein the peptide is selected from any continuous combination of 2 to 45 amino acids with at least one or more arginine or lysine amino acids from 20 biological amino acids;

wherein X is selected from the group consisting of CH_2CH_2 , $CH_2CH_2CH_2CH_2$, $CH_2CH_2OCH_2CH_2$, and $CH_2CH_2OCH_2CH_2OCH_2CH_2$; and

wherein Y is selected from the group consisting of linear or branched C_4H_8 , C_5H_{10} , C_6H_{12} , C_7H_{14} , C_8H_{16} , $C_{10}H_{20}$, and $C_{12}H_{24}$.

16. (Original) The method of claim 12, wherein the polyacetal-peptide comprises at least one recurring unit represented by a formula selected from the group consisting of (III) and (IV):



wherein the peptide is selected from any continuous combination of 2 to 45 amino acids with at least one or more arginine or lysine from 20 biological amino acids;

wherein X is selected from the group consisting of CH_2CH_2 , $\text{CH}_2\text{CH}_2\text{CH}_2\text{CH}_2$, $\text{CH}_2\text{CH}_2\text{OCH}_2\text{CH}_2$, and $\text{CH}_2\text{CH}_2\text{OCH}_2\text{CH}_2\text{OCH}_2\text{CH}_2$;

wherein Y is selected from the group consisting of linear or branched C_4H_8 , C_5H_{10} , C_6H_{12} , C_7H_{14} , C_8H_{16} , $\text{C}_{10}\text{H}_{20}$, and $\text{C}_{12}\text{H}_{24}$;

wherein W is a fatty acid moiety or a targeting ligand selected from the group consisting of galactose, lactose, mannose, transferrin, antibody fragment, and RGD peptide;

and m and n are positive integers.

17. (Original) The method of claim 12, wherein the solid support is selected from the group consisting of a multiwell plate, a dish, a flask, a tube, a slide and an implanted device.

18. (Original) The method of claim 12, wherein the polynucleotide is selected from the group consisting of DNA, RNA, DNA/RNA hybrids and chemically modified nucleic acids.

19. (Original) The method of claim 18, wherein the RNA is single-stranded or double-stranded.

20. (Original) The method of claim 18, wherein the RNA is ribozyme or siRNA.

21. (Original) The method of claim 18, wherein the DNA is circular, linear or single-strand oligonucleotide.

Appl. No. : **10/789,589**
Filed : **February 27, 2004**

22. (Original) The method of claim **12**, wherein the cells are prokaryotic or eukaryotic cells.
23. (Original) The method of claim **22**, wherein the eukaryotic cells are yeast, plant or animal cells.
24. (Original) The method of claim **23**, wherein the animal cells are mammalian cells.
25. (Original) The method of claim **24**, wherein the mammalian cells are selected from the group consisting of hematopoietic cells, neuronal cells, pancreatic cells, hepatic cells, chondrocytes, osteocytes, and myocytes.
26. (Original) The method of claim **25**, wherein the neuronal cells are NT-2 cells.
27. (Original) The method of claim **12**, wherein the cells are fully differentiated cells or progenitor/stem cells.